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CERTIFICATION OF FACSIMILE TRANSMISSION
UNDER 37 CFR § 1.8

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Amelia Tauchen

Attorney's Docket No.: 9266-2 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Baxter et al.
Serial No.: 09/844,537
Filed: April 27, 2001
Group Art Unit: 2162
Confirmation No.: 3743
Examiner: Jean M. Corrielus
FOR: METHODS, SYSTEMS, AND COMPUTER PROGRAM PRODUCTS FOR COMMUNICATING WITH A CONTROLLER USING A DATABASE INTERFACE

ATTACHED:

Faxcover	**1 page**
Supplemental Appeal Brief	**26 pages**
TOTAL	**27 pages**

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Amelia Tauchen

APPELLANTS' SUPPLEMENTAL BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

Sir:

This Supplemental Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" filed October 17, 2006 and received in the U. S. Patent and Trademark Office October 19, 2006 and the "Notice of Non-Compliant Appeal Brief" mailed on February 27, 2007.

Real Party In Interest

The real party in interest is assignee Triangle Open Gateway Automation, L.L.C., Raleigh, North Carolina.

Related Appeals and Interferences

Appellants are aware of no appeals or interferences that would be affected by the present appeal.

Status of Claims

Appellants appeal the final rejection of Claims 1 - 33, which as of the filing date of this Brief remain under consideration. Claims 1 - 33 stand rejected. Appellants submit that the claims involved in the appeal are independent Claims 1, 12, and 23 and rejected dependent Claims 2 - 11, 13 - 22, and 24 - 33as a reversal of the rejection of independent Claims 1, 12, and 23 is requested in the present appeal and a reversal of the rejection of dependent Claims 2 - 11, 13 - 22, and 24 - 33 is also requested based, at least, on the reversal of the rejection of the independent claims. The claims at issue as included in Appellants' response to the Office Action of June 15, 2005 are attached hereto as Appendix A.

Status of Amendments

No responses after final rejection have been filed in the present case.

Summary of Claimed Subject Matter

Independent Claim 1 is directed to a method for communicating with a controller (controller 38, FIG. 4) in real-time by storing a command for the controller in a database (database 44, FIG. 4). The command may be a command to write a value of a real-time process control variable to the controller or a command to read a value of a real-time process control variable from the controller (command table 62, FIG. 4; Specification, page 8, lines 17 - 19). Upon detecting the stored command in the database, the stored command is sent to the controller (command interface module 86, communication driver 88, FIG. 4; Specification, page 9, lines 14 - 19).

Independent Claim 12 is directed to a system for communicating with a controller (controller 38, FIG. 4) in real-time comprising means for storing a command for the controller in a database. The database 44 and command table 62 of FIG. 4 provide structure corresponding to the means for storing a command recitation. The command is selected from the group of commands consisting of a write command that is configured to write a value of a real-time process control variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller (command table 62, FIG. 4; Specification, page 8, lines 17 - 19). The system further comprises means for detecting the stored

command in the database and means for sending the detected command to the controller. The command interface module 86 of FIG. 4 (Specification page 9, lines 13 - 16) provides structure corresponding to the means for detecting recitation and the command interface module 86 and communication driver 88 of FIG. 4 (Specification, page 9, lines 14 - 19) provide structure corresponding to the means for sending recitation.

Independent Claim 23 is directed to computer program product for communicating with a controller (controller 38, FIG. 4) in real-time comprising a computer readable program medium having computer readable program code embodied therein (database 44, memory 74, FIG. 4), the computer readable program code comprising computer readable program code for storing a command for the controller in a database (database 44, command table 62, FIG. 4), wherein the command is selected from the group of commands consisting of a write command that is configured to write a value of a real-time process control variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller (command table 62, FIG. 4; Specification, page 8, lines 17 - 19). The computer program product further comprises computer readable program code for detecting the stored command in the database (command interface module 86, FIG. 4; Specification page 9, lines 13 - 16) and computer readable program code for sending the detected command to the controller (command interface module 86, communication driver 88, FIG. 4; Specification, page 9, lines 14 - 19).

Appellants refer to the description in the Specification at page 14, line 26 through page 15, line 19 for a description of the environment in which exemplary embodiments of the invention can be used. This description provides a context for the summary of the claimed subject matter set forth above.

Grounds of Rejection to be Reviewed on Appeal

Claims 1 – 33 stand rejected under 35 U.S.C. §112, second paragraph.

Claims 1 – 33 stand rejected under 35 U.S.C. §101.

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Independent Claims 1, 12, and 23 stand rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being unpatentable overover U. S. Patent No. 5,923,557 to Eidson (hereinafter "Eidson").

Argument

I. Claims 1 – 33 Satisfy the Requirements of 35 U.S.C. §112, Second Paragraph

The Office Action of July 17, 2006 (hereinafter "Office Action") alleges that independent Claim 1 is unclear because "[i]t is unclear as to how one having ordinary skill in the art would detect the stored the command in the database for the controller when the command is specifically stored in database for the controller. There is no need to detect the command for the controller if the command is already pre-stored for the controller." (Office Action, page 3).

Appellants respectfully submit that the Specification clearly describes detecting a stored command in the database and sending the detected command to a controller. For example, referring to FIG. 4 of the present application, the Specification explains that the command table may be configured to provide a queue for commands from the client 36. (Specification, page 8, lines 17 - 19). The Specification describes operations of the Command Interface Module (CIM) 86 as follows:

> The CIM 86 may be configured to monitor the command table 62 for commands to process. When the CIM 86 detects a command in the command table 62, the CIM 86 may verify that the detected command is a valid command for the destination controller 38 and may then send the command to the communication driver 88. (Specification, page 9, lines 13 - 17).

Thus, the CIM may detect a command in the command table and send the retrieved command to the controller via the communication driver in accordance with some embodiments of the present invention. As noted in the passage from the Specification reproduced above, the CIM 86 detects valid commands for the destination controller 38. Moreover, as shown in FIG. 1 and explained on page 7, lines 8 – 11, there may be more than one controller 38. The CIM 86, therefore, is able to discern between

commands for different controllers and a particular destination controller and also discern between invalid commands for the destination controller and valid commands for the destination controller. In this context, Appellants respectfully submit that the recitations of "storing a command for the controller in a database," "detecting the stored command in the database," and sending the detected command to the controller" are readily understood by one skilled in the art.

Accordingly, Appellants respectfully submit that Claims 1, 12, and 23 and all claims that depend therefrom satisfy the requirements of 35 U.S.C. §112 and respectfully request that the rejection be overturned.

The Office Action alleges that dependent Claim 3 is unclear because "..the retrieved command does not comprise sending a write command that is configured to write a first value of a real-time process variable to the controller.." (Office Action, page 4). Appellants disagree. As explained in the Specification on page 10, lines 27 – 32, the command stored in the command table "may be either a WRITE command or a READ command for a real-time process control variable (i.e., tag) associated with one of the controller(s) 38."

Accordingly, Appellants respectfully submit that Claim 3 satisfies the requirements of 35 U.S.C. §112 and respectfully request that the rejection be overturned.

The Office Action alleges that dependent Claim 4 is unclear because "..the ordinary skilled in the art would not be able to update a status of the retrieved command sent to the controller in a command table in the database to indicate whether the retrieved command sent to the controller succeeded or failed, as claimed." (Office Action, pages 4 and 5). Claim 4 recites:

> receiving a response from the controller responsive to sending the retrieved command to the controller; and
>
> updating a status of the retrieved command sent to the controller in a command table in the database to indicate whether the retrieved command sent to the controller succeeded or failed.

These recitations are clearly described in the Specification at page 12, lines 15 – 19 which states, with reference to FIG. 6: "If the response received is for a READ command, then the SIM 82 updates the command table 62 to indicate whether the READ command for that particular tag succeeded or failed at block 142, and also

updates the tag table 544 to include the current value of the real-time process control variable associated with that particular tag at block 144."

Accordingly, Appellants respectfully submit that Claim 4 satisfies the requirements of 35 U.S.C. §112 and respectfully request that the rejection be overturned.

The Office Action alleges that dependent Claim 5 is unclear because it is "not clear how one having ordinary skill in the art would update a current value associated with the first real-time process control" (Office Action, page 4). Appellants refer to FIG. 6 and page 12, lines 15 – 19 of the Specification, which state: "If the response received is for a READ command, then the SIM 82 updates the command table 62 to indicate whether the READ command for that particular tag succeeded or failed at block 142, and also updates the tag table 544 to include the current value of the real-time process control variable associated with that particular tag at block 144."

Accordingly, Appellants respectfully submit that Claim 5 satisfies the requirements of 35 U.S.C. §112 and respectfully request that the rejection be overturned.

The Office Action alleges that dependent Claim 6 is unclear because the "[i]t is important to note that the tag table does not include definitions of a plurality of real time process control variable." (Office Action, page 5). Appellants disagree. The Specification states: "...the term 'tags' refers to process control variables that are associated with the controllers 38." (Specification, page 7, lines 18 – 20). The Specification further states: "The tag table 54 defines each tag and specifies each tag's relationship to a memory address inside a controller 38." (Specification, page 7, lines 31 – 32).

Accordingly, Appellants respectfully submit that Claim 6 satisfies the requirements of 35 U.S.C. §112 and respectfully request that the rejection be overturned.

The Office Action alleges that dependent Claim 10 is unclear because "[i]t is unclear as to what the applicant meant by the notification method and stored procedure." (Office Action, page 5). Appellants disagree that such recitations are unclear. Appellants refer to page 8, lines 5 – 16 of the Specification where notification method(s) and stored procedure(s) are discussed.

Accordingly, Appellants respectfully submit that Claim 6 satisfies the requirements of 35 U.S.C. §112 and respectfully request that the rejection be overturned.

The Office Action alleges that Claims 12 – 33 are unclear for the same reasons used to reject Claims 1, 3 – 6, and 10. (Office Action, page 5). Appellants respectfully submit that Claims 12 - 33 satisfy the requirements of 35 U.S.C. §112 for the reasons discussed above and respectfully request that the rejection be overturned.

II. Claims 1 - 33 are Directed to Statutory Subject Matter

Claims 1 - 33 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. (Office Action, page 6). As discussed in the Manual Of Patent Examining Procedure (MPEP):

> The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and tangible result." *State Street*, 149F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research....MPEP, Sec. 2106(II.)(A).

Claim 1 is directed to a method of communicating with a controller and recites, in part:

> storing a command for the controller in a database, wherein the command is selected from the group of commands consisting of a write command that is configured to write a value of a real-time process control variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller;
>
> detecting the stored command in the database; and
>
> sending the detected command to the controller.

Claims 12 and 23 include similar recitations. According to Claims 1, 12, and 23 the command is either a write command that is configured to write a value of a real-time process control variable to the controller or a read command that is configured to read a value of a real-time process control variable from the controller. The Specification defines "controller" to mean "a unit that has local intelligence, such as a process logic

controller (PLC), and is used to monitor and/or control other field or external components by analog or field-bus communications. The term 'controller' is also used to refer to devices that have local intelligence and can monitor and control internal and/or external components with its own central processing unit (CPU) (e.g., a gas analyzer). "

Thus, independent Claims 1, 12, and 23 provide the useful, concrete, and tangible result of being able to write a value of a real-time process control variable to a controller or read a value of a real-time process control variable from a controller in a particular manner, i.e., using a database where the read or write command is stored and detected. Moreover, the real-time process control variable is not merely an abstract value, but is a particular value that relates to the operation of a controller, which is a physical device as discussed above. As explained in the Specification on page 6, lines 28 – 33, this result is useful because "[t]he database interface system 34 may allow the controllers 38 to be monitored, supervised, or controlled by a client 36 by sending commands to the controllers and receiving responses from the controllers through the database interface system 34. Conventional controller communication systems have typically used memory-to-memory information transfer methodologies, which can result in a loss of data should a power failure occur."

The next relevant inquiry under 35 U.S.C. §101 is whether the claims fall into a statutory or non-statutory category. "As cast, 35 U.S.C. §101 defines four categories of inventions Congress deemed to be the appropriate subject matter of a patent; namely, processes, machines, manufactures and compositions of matter." (MPEP, Sec. 2106(IV.)(A)). Appellants submit that independent Claim 1 falls under the "process" statutory category of 35 U.S.C. §101, independent Claim 12 falls under the "machine" statutory category of 35 U.S.C. §101, and independent Claim 23 falls under the "manufacture" category of 35 U.S.C. §101.

With respect to independent Claim 23, this claim is directed to a computer program product for communicating with a controller in real-time and comprises a computer readable medium having computer readable program code embodied therein. Appellants respectfully submit that independent Claim 23 is fully in compliance with In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995), wherein the Federal Circuit held that such recitations define statutory subject matter.

Appellants respectfully request that the present application be reviewed and the rejection of independent Claims 1 - 33 under 35 U.S.C. §101 be reversed based on the failure of the Examiner to establish that Claims 1, 12, and 23 are directed to non-statutory subject matter for at least these reasons.

III. Introduction to 35 U.S.C. §102/ §103 Analysis

Under 35 U.S.C. § 102, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." M.P.E.P. § 2131 (quoting *Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987)). "Anticipation under 35 U.S.C. § 102 requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention." *Apple Computer Inc. v. Articulate Sys. Inc.*, 57 U.S.P.Q.2d 1057, 1061 (Fed. Cir. 2000). "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" M.P.E.P. § 2112 (citations omitted).

A finding of anticipation further requires that there must be no difference between the claimed invention and the disclosure of the cited reference as viewed by one of ordinary skill in the art. *See Scripps Clinic & Research Foundation v. Genentech Inc.*, 927 F.2d 1565, 1576, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991). In particular, the Court of Appeals for the Federal Circuit held that a finding of anticipation requires absolute identity for each and every element set forth in the claimed invention. *See Trintec Indus. Inc. v. Top-U.S.A. Corp.*, 63 U.S.P.Q.2d 1597 (Fed. Cir. 2002). Additionally, the cited prior art reference must be enabling, thereby placing the allegedly disclosed matter in the possession of the public. *In re Brown*, 329 F.2d 1006, 1011, 141 U.S.P.Q. 245, 249 (C.C.P.A. 1964). Thus, the prior art reference must adequately describe the claimed invention so that a person of ordinary skill in the art could make and use the invention.

A determination under 35 U.S.C. §103 that an invention would have been obvious to someone of ordinary skill in the art is a conclusion of law based on fact. *Panduit Corp. v. Dennison Mfg. Co.* 810 F.2d 1593, 1 U.S.P.Q.2d 1593 (Fed. Cir. 1987), *cert. denied*, 107 S.Ct. 2187. After the involved facts are determined, the decision maker must then make the legal determination of whether the claimed invention as a whole would have been obvious to a person having ordinary skill in the art at the time the invention was unknown, and just before it was made. *Id.* at 1596. The United States Patent and Trademark Office (USPTO) has the initial burden under §103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

To establish a prima facie case of obviousness, the prior art reference or references when combined must teach or suggest *all* the recitations of the claims, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. M.P.E.P. §2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. §2143.01, citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). As emphasized by the Court of Appeals for the Federal Circuit, to support combining references, evidence of a suggestion, teaching, or motivation to combine must be **clear and particular**, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). In another decision, the Court of Appeals for the Federal Circuit has stated that, to support combining or modifying references, there must be **particular** evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

Appellants respectfully submit that the pending claims are patentable over the cited reference for at least the reason that the cited reference does not disclose or suggest, among other things, storing a write command for a real-time process control variable or a read command for a real-time process control variable for a controller in

a database and then detecting the stored command and sending the detected command to the controller. The patentability of the pending claims is discussed in detail hereinafter.

A. Independent Claims 1, 12, and 23 are Patentable over Eidson and Srinivasan

Independent Claims 1, 12, and 23 stand rejected under 35 U.S.C. §103 as being unpatentable over Eidson in view of Srinivasan.

Independent Claims 1, 12, and 23 are directed to methods, systems, and computer program products for communicating with a controller in real-time. For example, Claim 1 recites:

> storing a command for the controller in a database, wherein the command is selected from the group of commands consisting of a write command that is configured to write a value of a real-time process control variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller;
>
> detecting the stored command in the database; and
>
> sending the detected command to the controller.

Claims 12 and 23 include similar recitations.

Thus, according to the recitations of Claims 1, 12, and 23, a write or read command for a controller is stored in a database. The stored command is detected and then sent to the controller. In sharp contrast, Eidson describes an interface to process control devices in which controllers (*e.g.*, controllers 60, 61, and 62) communicate with process control devices (*e.g.*, devices 90, 91, 100, 110, and 112) via mappers (*e.g.*, mappers 70, 71, and 72). (Eidson, col. 3, line 59 - col. 4, line 4). Appellants note that the databases described in Eidson, such as the device-oriented interface database 32 and the device dictionary 38, are used by the mappers 70, 71, and 72 to communicate with the control devices 90, 91, 100, 110, and 112 using an appropriate device oriented protocol 14. In particular, the device-oriented interface database 32 includes information that describes the process control devices in terms of the device-oriented protocol. The device dictionary 38 contains a set of predetermined device-specific information that is tailored in terms of the device-oriented protocol for each

process control device supported by a mapper. (Eidson, col. 5, lines 30 - 38). Appellants further note that FIG. 3 of Eidson shows a dictionary server 54 that is connected to the communication network 52. This dictionary server 54 is used by the mappers to build device specific information in their respective device-oriented interface databases. (Eidson, col. 10, lines 21 - 29).

The Office Action states:

> Eidson discloses also the use of "sending the detected command to the controller" as a way of passing the information to the mapping processor... (Final Action, page 12).

It appears that the Office Action is alleging that the mapping processor 30 described in Eidson corresponds to the controller recited in the pending independent claims. Appellants respectfully submit that if the mapping processor 30 is alleged to correspond to the controller recited in the independent claims, then Eidson does not disclose or suggest detecting the stored command in the database and sending the detected command to the controller. That is, according to the Final Action, device specific information is passed to the mapping processor, which writes the information into a database. (Office Action, page 12; Eidson, col. 5, line 65, through col. 6, line 7). In sharp contrast to the recitations of independent Claims 1, 12, and 23, however, the device specific information is not detected in the database and then, once detected, passed to the mapping processor. In fact, according to Eidson, the mapping processor 30 stores the device specific information in the database so there would be no need to detect the information and then send the information back to the mapping processor 30. (Eidson, col. 5, line 65, through col. 6, line 7).

Moreover, Appellants respectfully submit that Eidson does not disclose or suggest storing a command for a controller in a database where the command is selected from a write command that is configured to write a value of a real-time process control variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller as recited in independent Claims 1, 12, and 23. Instead, Eidson explains that "[t]he mapping processor 30 builds a set of configuration information into the device-oriented interface database 32. The configuration information which the mapping processor 30 builds into the device-oriented interface database 32 includes information that

described the process control devices 20-22 in terms of the device oriented protocol 14." (Eidson, col. 4, lines 42 - 47; emphasis added). Thus, Eidson describes storing configuration information that describe process control devices in a database rather than a write and/or read command for a real-time process control variable as recited in independent Claims 1, 12, and 23.

In response to the above analysis, the Final Action asserts the following:

> Eidson discloses... means wherein the information in the database includes a set of device specific information for each of the process control devices detected by the mapping processor, where such device specific information for a particular process control device contains information such as the number of variables associated with the process control device, the triggering requirement, wherein in general, each variable associated with a process control device maps to a channel (col. 4, lines 55-65). (Office Action, pages 11 - 12).

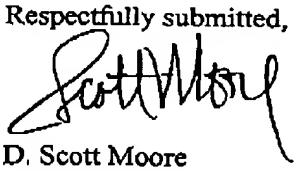
The foregoing passage from the Office Action along with the reference to Eidson, however, appears to support Appellants' contention that Eidson describes storing configuration information that describe process control devices in a database rather than a write and/or a read command for a real-time process control variable as recited in independent Claims 1, 12, and 23. That is, the variables referred to in Eidson relate to device specific information and interface specific information. (Eidson, col. 4, lines 51 - 54). Appellants cannot find any disclosure or suggestion in Eidson regarding storing a command for a controller in a database where the command is selected from a write command that is configured to write a value of a real-time process control variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller.

For at least the foregoing reasons, Appellants respectfully submit that independent Claims 1, 12, and 23 are patentable over the cited reference and that dependent Claims 2 - 11, 13 - 22, and 24 - 33 are patentable at least by virtue of their depending from an allowable claim. Accordingly, Appellants respectfully request that the rejection of Claims 1 - 33 be reversed based on the failure of the Examiner to establish a prima facie case of obviousness under 35 U.S.C. §103 for at least these reasons.

IV. Conclusion

In summary, Appellants respectfully submit that, with respect to Claims 1 - 33 the cited reference does not teach all of the recitations of the claims. Accordingly, Appellants respectfully request reversal of the rejection of Claims 1 - 33 based on the cited reference. Moreover, Claims 1 – 33 satisfy the requirements of 35 U.S.C. §112 and 35 U.S.C. §101.

Respectfully submitted,



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APPENDIX A

1. (Previously Presented) A method of communicating with a controller in real-time, comprising:

storing a command for the controller in a database, wherein the command is selected from the group of commands consisting of a write command that is configured to write a value of a real-time process control variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller;

detecting the stored command in the database; and

sending the detected command to the controller.

2. (Previously Presented) The method of Claim 1, wherein detecting the stored command comprises:

verifying that the stored command is a valid command for the controller.

3. (Original) The method of Claim 1, wherein sending the retrieved command to the controller comprises sending a write command that is configured to write a first value of a first real-time process control variable to the controller, the method further comprising:

sending a read command that is configured to read the first value of the first real-time process control variable to the controller responsive to sending the write command that is configured to write the first value of the first real-time process control variable to the controller.

4. (Original) The method of Claim 1, further comprising:

receiving a response from the controller responsive to sending the retrieved command to the controller; and

updating a status of the retrieved command sent to the controller in a command table in the database to indicate whether the retrieved command sent to the controller succeeded or failed.

5. (Original) The method of Claim 4, wherein sending the retrieved command to the controller comprises sending a read command that is configured to read a first value of a first real-time process control variable from the controller, the method further comprising:

updating a current value associated with the first real-time process control variable in a tag table in the database with the first value of the first real-time process control variable read from the controller responsive to receiving the response from the controller.

6. (Original) The method of Claim 1, further comprising:

providing a tag table in the database that comprises definitions of a plurality of real-time process control variables, wherein each of the plurality of real-time process control variables is associated with a monitoring frequency and a current value;

periodically sending a read command that is configured to read a value of a real-time process control variable for respective ones of the plurality of real-time process control variables from the controller based on the respective monitoring frequencies; and

updating the respective current values for respective ones of the plurality of real-time process control variables with the respective values of the real-time process control variables read from the controller.

7. (Original) The method of Claim 6, further comprising:

providing a log module table in the database that comprises a list of at least one of the real-time process control variables defined in the tag table, wherein the at least one real-time process control variable is associated with a logging criterion; and

periodically reading the tag table for the at least one real-time process control variable in the log module table to obtain a current value associated therewith based on the logging criterion.

8. (Original) The method of Claim 7, further comprising:

comparing an age of the current value associated with the at least one real-time process control variable with a predefined age threshold;

storing the current value for the at least one real-time process control variable in a historical log table if the age of the current value associated with the at least one real-time process control variable does is less than the predefined age threshold; and

sending a read command that is configured to read a value of the at least one real-time process control variable from the controller if the current value for the at least one real-time process control variable is greater than or equal to the predefined age threshold.

9. (Original) The method of Claim 7, wherein the logging criterion is selected from the group consisting of a monitoring frequency, an event trigger, a percent change in value, and a client request.

10. (Original) The method of Claim 6, further comprising:

providing an event module table in the database that comprises a definition of at least one event based on at least one of the real-time process control variables defined in the tag table, wherein the at least one event is associated with at least one of a notification method and a stored procedure;

monitoring the current value of the at least one real-time process control variable to determine if the at least one event has occurred; and

performing at least one of the notification method and the stored procedure if the at least one event has occurred.

11. (Original) The method of Claim 10, further comprising:

providing an event log table in the database; and

saving the current value of the at least one real-time process control variable in the event log table if the at least one event has occurred.

12. (Previously Presented) A system for communicating with a controller in real-time, comprising:

means for storing a command for the controller in a database, wherein the command is selected from the group of commands consisting of a write command that is configured to write a value of a real-time process control variable to the controller

and a read command that is configured to read a value of a real-time process control variable from the controller;

means for detecting the stored command in the database; and

means for sending the detected command to the controller.

13. (Previously Presented) The system of Claim 12, wherein the means for detecting the stored command comprises:

means for verifying that the stored command is a valid command for the controller.

14. (Original) The system of Claim 12, wherein the means for sending the retrieved command to the controller comprises means for sending a write command that is configured to write a first value of a first real-time process control variable to the controller, the system further comprising:

means for sending a read command that is configured to read the first value of the first real-time process control variable to the controller responsive to the means for sending the write command that is configured to write the first value of the first real-time process control variable to the controller.

15. (Original) The system of Claim 12, further comprising:

means for receiving a response from the controller responsive to sending the retrieved command to the controller; and

means for updating a status of the retrieved command sent to the controller in a command table in the database to indicate whether the retrieved command sent to the controller succeeded or failed.

16. (Original) The system of Claim 15, wherein the means for sending the retrieved command to the controller comprises means for sending a read command that is configured to read a first value of a first real-time process control variable from the controller, the system further comprising:

means for updating a current value associated with the first real-time process control variable in a tag table in the database with the first value of the first real-time

process control variable read from the controller responsive to the means for receiving the response from the controller.

17. (Original) The system of Claim 12, further comprising:

means for providing a tag table in the database that comprises definitions of a plurality of real-time process control variables, wherein each of the plurality of real-time process control variables is associated with a monitoring frequency and a current value;

means for periodically sending a read command that is configured to read a value of a real-time process control variable for respective ones of the plurality of real-time process control variables from the controller based on the respective monitoring frequencies; and

means for updating the respective current values for respective ones of the plurality of real-time process control variables with the respective values of the real-time process control variables read from the controller.

18. (Original) The system of Claim 17, further comprising:

means for providing a log module table in the database that comprises a list of at least one of the real-time process control variables defined in the tag table, wherein the at least one real-time process control variable is associated with a logging criterion; and

means for periodically reading the tag table for the at least one real-time process control variable in the log module table to obtain a current value associated therewith based on the logging criterion.

19. (Original) The system of Claim 18, further comprising:

means for comparing an age of the current value associated with the at least one real-time process control variable with a predefined age threshold;

means for storing the current value for the at least one real-time process control variable in a historical log table if the age of the current value associated with the at least one real-time process control variable does is less than the predefined age threshold; and

means for sending a read command that is configured to read a value of the at least one real-time process control variable from the controller if the current value for the at least one real-time process control variable is greater than or equal to the predefined age threshold.

20. (Original) The system of Claim 18, wherein the logging criterion is selected from the group consisting of a monitoring frequency, an event trigger, a percent change in value, and a client request.

21. (Original) The system of Claim 17, further comprising:

means for providing an event module table in the database that comprises a definition of at least one event based on at least one of the real-time process control variables defined in the tag table, wherein the at least one event is associated with at least one of a notification method and a stored procedure;

means for monitoring the current value of the at least one real-time process control variable to determine if the at least one event has occurred; and

means for performing at least one of the notification method and the stored procedure if the at least one event has occurred.

22. (Original) The system of Claim 21, further comprising:

means for providing an event log table in the database; and

means for saving the current value of the at least one real-time process control variable in the event log table if the at least one event has occurred.

23. (Previously Presented) A computer program product for communicating with a controller in real-time, comprising:

a computer readable program medium having computer readable program code embodied therein, the computer readable program code comprising:

computer readable program code for storing a command for the controller in a database, wherein the command is selected from the group of commands consisting of a write command that is configured to write a value of a real-time process control

variable to the controller and a read command that is configured to read a value of a real-time process control variable from the controller;

computer readable program code for detecting the stored command in the database; and

computer readable program code for sending the detected command to the controller.

24. (Previously Presented) The computer program product of Claim 23, wherein the computer readable program code for detecting the stored command comprises:

computer readable program code for verifying that the stored command is a valid command for the controller.

25. (Original) The computer program product of Claim 23, wherein the computer readable program code for sending the retrieved command to the controller comprises computer readable program code for sending a write command that is configured to write a first value of a first real-time process control variable to the controller, the computer program product further comprising:

computer readable program code for sending a read command that is configured to read the first value of the first real-time process control variable to the controller responsive to the computer readable program code for sending the write command that is configured to write the first value of the first real-time process control variable to the controller.

26. (Original) The computer program product of Claim 23, further comprising:

computer readable program code for receiving a response from the controller responsive to sending the retrieved command to the controller; and

computer readable program code for updating a status of the retrieved command sent to the controller in a command table in the database to indicate whether the retrieved command sent to the controller succeeded or failed.

27. (Original) The computer program product of Claim 26, wherein the computer readable program code for sending the retrieved command to the controller comprises computer readable program code for sending a read command that is configured to read a first value of a first real-time process control variable from the controller, the computer program product further comprising:

computer readable program code for updating a current value associated with the first real-time process control variable in a tag table in the database with the first value of the first real-time process control variable read from the controller responsive to the computer readable program code for receiving the response from the controller.

28. (Original) The computer program product of Claim 23, further comprising:

computer readable program code for providing a tag table in the database that comprises definitions of a plurality of real-time process control variables, wherein each of the plurality of real-time process control variables is associated with a monitoring frequency and a current value;

computer readable program code for periodically sending a read command that is configured to read a value of a real-time process control variable for respective ones of the plurality of real-time process control variables from the controller based on the respective monitoring frequencies; and

computer readable program code for updating the respective current values for respective ones of the plurality of real-time process control variables with the respective values of the real-time process control variables read from the controller.

29. (Original) The computer program product of Claim 28, further comprising:

computer readable program code for providing a log module table in the database that comprises a list of at least one of the real-time process control variables defined in the tag table, wherein the at least one real-time process control variable is associated with a logging criterion; and

computer readable program code for periodically reading the tag table for the at least one real-time process control variable in the log module table to obtain a current value associated therewith based on the logging criterion.

30. (Original) The computer program product of Claim 29, further comprising:

computer readable program code for comparing an age of the current value associated with the at least one real-time process control variable with a predefined age threshold;

computer readable program code for storing the current value for the at least one real-time process control variable in a historical log table if the age of the current value associated with the at least one real-time process control variable does is less than the predefined age threshold; and

computer readable program code for sending a read command that is configured to read a value of the at least one real-time process control variable from the controller if the current value for the at least one real-time process control variable is greater than or equal to the predefined age threshold.

31. (Original) The computer program product of Claim 29, wherein the logging criterion is selected from the group consisting of a monitoring frequency, an event trigger, a percent change in value, and a client request.

32. (Original) The computer program product of Claim 28, further comprising:

computer readable program code for providing an event module table in the database that comprises a definition of at least one event based on at least one of the real-time process control variables defined in the tag table, wherein the at least one event is associated with at least one of a notification method and a stored procedure;

computer readable program code for monitoring the current value of the at least one real-time process control variable to determine if the at least one event has occurred; and

computer readable program code for performing at least one of the notification method and the stored procedure if the at least one event has occurred.

33. (Original) The computer program product of Claim 32, further comprising:

computer readable program code for providing an event log table in the database; and

computer readable program code for saving the current value of the at least one real-time process control variable in the event log table if the at least one event has occurred.

APPENDIX B – EVIDENCE APPENDIX

None

APPENDIX C – RELATED PROCEEDINGS APPENDIX

None.